

REMARKS

Claims 2 – 16 and 18 – 23 are pending in the present Application. No claims have been cancelled, amended, or added, leaving Claims 2 – 6 and 18 – 23 for consideration upon entry of the present Remarks. Reconsideration and allowance of the claims are respectfully requested in view of the following remarks.

Claim Rejections Under 35 U.S.C. § 102(b) and §103(a)

Claim 23 stands rejected under 35 U.S.C. § 102(b), as allegedly anticipated by United States Patent No. 6,224,706 to Matich, and stands rejected under 35 U.S.C. §103(a), as allegedly unpatentable over Matich. Applicants respectfully traverse these rejections.

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Applicants respectfully submit and the Office Action admits that Matich fails to disclose using a fiber-reinforced plastic material of a specific void content. (Office Action dated December 12, 2007, hereinafter “OA 12/07”, page 3)

It is also noted that OA 12/07 states: “Applicant contends that Matich does not show pulling a vacuum through a shaped substrate. This is not persuasive because even a flat substrate has a ‘shape’.” (Page 7) However, to anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987). Moreover, “[t]he identical invention must be shown in as complete detail as is contained in the *** claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claim 23 is method of forming a layered article. The method comprises:

thermoforming a substrate sheet to form a shaped substrate, wherein the substrate sheet comprises a fiber-reinforced plastic material having a void content sufficient to allow a vacuum to be applied through the substrate;

wherein thermoforming comprises heating the substrate sheet to a temperature sufficient to loft the fibers;

pulling a vacuum through the shaped substrate; and
pulling a film layer onto a surface of the shaped substrate to form the layered article.

Hence, Claim 23, which must be read as a whole, comprises heating a substrate to a particular temperature, (sufficient to loft the fibers) to form a shaped substrate, pulling a vacuum through the shaped substrate, and pulling a film layer onto the surface of the shaped substrate.

Matich fails to disclose using a fiber-reinforced plastic material of a specific void content, fails to disclose heating a fiber-reinforced plastic material to a temperature sufficient to loft the fibers, fails to pull a vacuum through that fiber-reinforced plastic material that has been heated to a temperature sufficient to loft the fibers, and fails to pull a film layer onto a fiber-reinforced plastic material that has been heated to a temperature sufficient to loft the fibers. Hence, Matich fails to disclose many elements of Claim 23. Therefore, Claim 23 is novel and non-obvious.

The Office Action states Matich shows a cooling step after the substrate and film have been joined and the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. The Office Action concludes it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to include an intermediate cooling step to avoid unwanted deformation of the substrate before attaching the film. (OA 12/07, page 7) Applicants respectfully disagree and submit that a *prima facie* case of obviousness has not been established. Matich discloses:

applying a fluid pressure differential between that side of said sheet remote from said stack and that side of said stack remote from said sheet, to compress the members of said stack and conform said sheet to the shape of said compressed stack and mutually engage said sheet and compressed stack, air initially trapped between said stack and sheet and within said stack passing through said stack”

(Match, Col. 1, lines 51 – 58) If, as suggested in the Office Action, an intermediate cooling step is employed, it is not clear that the compressed stack would be a shaped stack wherein a vacuum could be pulled through the shaped substrate. If the Office Action is suggesting not putting the sheet on until the intermediate step of cooling has occurred, there is no prompting or motivation for such an intermediate step, which would only seem to add time and complexity to the process and would possibly not work.

Additionally, Claim 23 recites, “...wherein thermoforming comprises *heating* the substrate sheet to a temperature sufficient to loft the fibers...” (Claim 23; *emphasis added*) Lofting the fibers means expanding in the z-direction when *heated*. (Paragraph [0023]) Even with the intermediate cooling, at least this element of the claim is still missing.

The present claims are not obvious or anticipated by Match. Several elements of Claim 23, when taken as a whole (as is required), are missing and are not obvious. Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 2 – 11, 13, 14, 16 and 21 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Match in view of United States Patent No. 5,968,629 to Masui, et al. (Masui). Applicants respectfully traverse this rejection and submit that a *prima facie* case of obviousness has not been established.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, or knowledge generally available in the art at the time of the invention, must provide some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). “A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). To find obviousness, the Examiner must “identify a reason that would have prompted a person of ordinary skill in

the art in the relevant field to combine the elements in the way the claimed new invention does.” *Id.*

With regard to Claims 3 and 21, the Office Action alleges that Matich shows the process as claimed, but admits that Matich does not show using a fiber-reinforced plastic material of a specific void content. (OA 12/07, page 3) The Office Action also alleges Masui shows it is known to carry out a “method for forming a layered article, wherein the substrate is a fiber-reinforced plastic material having a void content of 50%.” (OA 12/07, page 3) The Office Action then contends it would have been obvious to one of ordinary skill in the art “to use Masui’s fiber-reinforced plastic material as the substrate in Matich’s molding process in order to enhance the acoustic absorbing component of the final article...” (OA 12/07, page 3)

With respect to Claim 8, the Office Action alleges that Matich shows the process as claimed, but admits that Matich does not show using an open celled fiber-reinforced plastic material. (OA 12/07, page 4) The Office Action also alleges Masui shows it is known to carry out a “method for forming a layered article, wherein the substrate is an open-celled fiber-reinforced plastic material,” by interpreting that “expanded” implies an open-celled structure. (OA 12/07, page 4) The Office Action then contends it would have been obvious to one of ordinary skill in the art “to use Masui’s open-celled fiber-reinforced plastic material as the substrate in Matich’s molding process in order to enhance the acoustic absorbing component of the final article...” (OA 12/07, page 4)

Applicants respectfully submit that, contrary to the contentions in the Office Action, the process in the present application and the process in Matich are different. In Matich, (i) a vacuum is not pulled through a fiber-reinforced plastic material that has been thermoformed, but rather air is evacuated from between the sheet and the block *as the layers are compressed together*. The Office Action contends that Matich shows pulling a film layer onto the substrate because “even a flat substrate has a ‘shape.’” (OA 12/07, page 7) Applicants respectfully disagree. Webster’s New Twentieth Century Dictionary defines “shape” as: to give definite shape to; to make as by cutting or molding material. (2d Ed., unabridged, Simon & Schuster, 1983) Accordingly, in Matich, since air is

evacuated from between the sheet and the block as the layers are compressed together, a vacuum is not pulled through a shaped substrate as in the present application. As mentioned above, but especially in view of the definition of “shape”, in Matich there is no shaped substrate until the entire stack of layers have been compressed and cooled.

Masui is directed to an “acoustic absorbing component comprising a fiber-reinforced thermoplastic resin having a percentage of void being not less than 50 vol %”. (Abstract) Applicants respectfully submit that Masui discloses that to enhance acoustic absorbing performance, it is necessary to have a fiber-reinforced plastic material with a void content of *not less than* 50 vol.%. Hence, one of ordinary skill in the art would not be motivated to take the material of Masui and use it as the substrate in Matich’s molding process as contended in the Office Action, because Matich works to “evacuate the air from between the base plate 2 and the sheet 37.” (Col. 4, lines 23 – 24) In so doing, the material is compressed. The Office Action fails to explain how a reference specifically disclosing “removal of the air” (Matich, Col. 3, line 12) would maintain a void content of “not less than 50%.” Also, it appears the acoustic absorbing properties of the material could be lost (e.g., if the material is compressed as is taught in Matich). Therefore, there is no motivation to take the material of Masui and use it in Matich’s molding process to enhance the acoustic absorbing component of the final article as suggested by the Office Action, since it renders the art unsatisfactory for its intended purpose. MPEP § 2143.01.

Applicants respectfully submit there was no motivation, prompting, or suggestion to combine the method in Matich’s patent with the fiber reinforced plastic material in Masui’s patent. Matich is concerned with structurally strong articles and is directed to a method of making layered structural articles using expanded polystyrene (Abstract), while Masui is directed to an acoustic absorbing component. (Abstract) The material used in Matich is inherently weak and the method serves to create a structurally strong article (Abstract), while the starting material in Masui, a fiber-reinforced plastic, is designed for acoustical purposes. As a result, it would not be obvious (there is no motivation or prompting) to use the fiber-reinforced thermoplastic of Masui in combination with the method in Matich.

Considering that there is no prompting to combine the process of Matich and the materials of Masui, no *prima facie* case of obviousness has been established. Additionally, as is explained in detail in the prior response, the dependent claims provide additional patentable distinction. These references fail to render the present claims obvious. Reconsideration and withdrawal of this rejection are respectfully requested.

In addition, the Office Action fails to support the various elements of the dependent claims. For example, regarding Claims 4 and 5, it is alleged that “Masui shows that it is known to carry out a method wherein the void content is 50 vol.% (Column 2, lines 33 – 35)” (OA 12/07, page 3) However, Masui discloses “having a percentage of void being *not less than 50 vol%*” (Col. 2, lines 34 – 35, emphasis added) Claim 4 recites “the void content is about 10 vol.% to about 50 vol.%”, and Claim 5 recites, “the void content is about 25 vol.% to about 50 vol.%”. Claims 4 and 5 recite void content levels that are below 50 vol.%. Applicants submit that Masui teaches away from Applicant’s claims. Masui is improperly relied upon; a *prima facie* case of obviousness has not been established.

Claim 7 recites that the “shaped substrate is foraminated”. The Office Action alleges Masui shows it is known to carry out a method wherein the shaped substrate is foraminated interpreting that “expanded” implies a foamed structure and assuming it is functionally equivalent to a foraminated structure. (OA 12/07, page 3) The Office Action then alleges it would have been obvious to “use Masui’s foraminated substrate as that during Matich’s molding process in order to enhance the acoustic absorbability of the final product.” (OA 12/07, pages 3- 4) Firstly, it is not explained how the “compression of the stack” will maintain the acoustic abilities of the material of Masui. Matich states:

to compress the members of said stack and conform said sheet to the shape of said compressed stack and mutually engage said sheet and compressed stack, air initially trapped between said stack and sheet and within said stack passing through said stack”

(Matich, Col. 1, lines 54 – 58)

Additionally, Applicants also respectfully submit that they may be their own lexicographers. (MPEP §2111.01), and that claims must be read in light of the specification. (MPEP §2111) As such, “[w]here an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim.” *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301 (Fed. Cir. 1999). Applicants disclose, “the term ‘foraminated’ is used throughout this disclosure merely for convenience to discuss systems having holes *other than those formed by a network of cells in fluid communication with each other.*” (Paragraph [0022], *emphasis added*) Thus, the foamed structure of Masui’s expanded resin is not equivalent to the presently claimed foraminated structure.

Furthermore, the Office Action cites Column 5, lines 21-23 of Masui and states with respect to Claim 8, that “it is being interpreted that ‘expanded’ implies an open-celled structure.” (OA 12/07, page 4) With respect to Claim 7, the Office Action cites Column 5, lines 21-22 of Masui and states “it is being interpreted that ‘expanded’ implies a foamed structure, which is functionally equivalent to a foraminated structure.” (OA 12/07, page 3) The specification discusses a difference between an open-celled structure and a foraminated structure in Paragraph [0022]. Accordingly, the term “expanded” as cited by the Office Action cannot imply both an open-celled structure and a foraminated structure.

Claim 14 recites, “heating the substrate to a temperature sufficient to loft the fibers.” The Office Action contends that Matich discloses, “heating a substrate sheet to a temperature (Column 4, lines 27 – 30)”. (OA 12/07, page 5) However, what is disclosed is “[i]f necessary heat can be applied.” As recited in the Specification, lofting the fibers includes “expanding in the z-direction when heated.” (Paragraph [0023]) Nothing in Matich or Masui discloses or suggests that the temperature used is such that will loft the fibers. Applicants respectfully submit that a *prima facie* case of obviousness has not been established as the references have been taken out of context, and not all claim elements have been disclosed.

The Examiner also contends that

heating the sheet is the positively-claimed method step, while “[allowing] lofting of fibers” is only an intended use of the heating step, and therefore, not a positively recited method step.

(OA 12/07, page 5) Applicants respectfully disagree. Applicants aver that lofting the fibers specifies the degree of heating; e.g., the temperature to which the sheet must be heated, i.e. a temperature sufficient to loft the fibers. Hence, the claim element “sufficient to loft the fibers...” is not merely an “intended use of the heating step”; it is a positively-claimed method step.

The dependent claims are novel and non-obvious; they are independently patentable.

Claims 12 and 18 – 20 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Matich and Masui, and further in view of United States Patent No. 4,529,641 to Holtrop, et al. (Holtrop). Applicants respectfully traverse this rejection.

Regarding Claim 12, the Office Action alleges that Matich shows the process as claimed but does not specifically show using plug-assist vacuum molding. (OA 12/07, page 5) The Office Action further alleges that Holtrop shows a method wherein the substrate sheet is thermoformed with a membrane assisted vacuum pressure forming method with plug assist. (OA 12/07, page 5) The Office Action then contends that it would have been *prima facie* obvious to use Holtrop’s plug assist vacuum molding as that of Matich’s vacuum molding process to facilitate the most efficient vacuum molding available. (OA 12/07, page 5)

Applicants respectfully disagree and submit that *prima facie* case of obviousness has not been established. Holtrop merely discloses:

In some instances it is also advantageous to apply vacuum to the mold cavities to assist in expanding non-adhered sections of the foamed thermoplastic.

(Col. 5, lines 3 – 5) Applicants note that (i) Matich teaches away from vacuum forming: “this is similar to vacuum forming but is significantly different” (Col. 3, lines 1 – 2), and

that (ii), Holtrop is completely silent with regard to a plug assist in the section relied upon. Therefore, the combination is not proper. Furthermore, as noted above, Matich does not have a shaped substrate at the time that a vacuum is pulled.

With respect to Claims 18 – 20, the Office Action relies on Matich and Masui to allegedly disclose the process. (OA 12/07, pages 5-6) As previously discussed, Matich and Masui fail to disclose the claimed process and the claimed materials. The Office Action states that Claims 18-20 are dependent on Claim 12 and as a result, appear in the section wherein Claim 12 is rejected. (OA 12/07, page 8) Applicants respectfully submit that Claim 18 is independent and Claims 19 and 20 depend from independent Claim 18. Furthermore, the Office Action does not explain what in Holtrop is relied upon for combination with the two references regarding Claims 18-20.

Reconsideration and withdrawal of this rejection are respectfully requested.

Claim 15 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Matich, Masui, and Holtrop, and further in view of United States Patent No. 5,854,149 to Nagayama, et al. (Nagayama). Applicants respectfully traverse this rejection.

Claim 15, which ultimately depends from Claim 3, is rejected because Matich allegedly shows the process as claimed but not heating to a temperature of 232°C to 371°C, but Nagayama allegedly discloses, “it is known to carry out a method wherein the heating temperature is 250°C (Column 28, lines 57-66).” (OA 12/07, page 6) The Office Action concludes it would have been *prima facie* obvious to one of ordinary skill in the art to use Nagayama’s processing temperature during Matich’s thermoforming process to properly process and form the specific molding material without overheating or underheating. Applicants respectfully submit that a *prima facie* case of obviousness has not been established.

The alleged reasoning for the combination is based upon the presumption that Matich does not properly process the molding material, and there is no motivation to make such an assumption. There is no motivation or prompting to pick these elements from Nagayama to include them in Matich. Additionally, and regardless, Nagayama fails

to remedy the many deficiencies of Matich and Masui. Hence, these references, even properly combined, fail to render the present claims obvious.

Additionally, the Office Action improperly relies on Nagayama to disclose a process temperature used in making a "Paper-Made Stampable Sheet". (Title) Applicants respectfully submit that in determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. MPEP § 2141.02, citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983) Besides the fact that the present claims have already been found allowable over this reference, no motivation, prompting, or suggestion exists that would lead one skilled in the art to consider the processing temperature of a non-analogous art, and combine it in a vastly different process using a different material. Applicants submit that the only motivation, prompting, or suggestion comes from Applicants' specification. Nagayama fails to remedy the multiple deficiencies of Matich. Thus a *prima facie* case of obviousness has not been established for Claim 15.

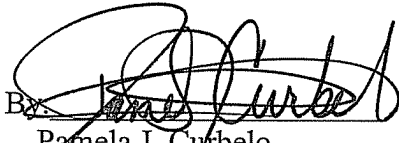
Reconsideration and withdrawal of this rejection are respectfully requested.


It is believed that the foregoing remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejections and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-3622.

Respectfully submitted,

CANTOR COLBURN LLP


By: Pamela J. Curbelo
Registration No. 34,676


Krista A. Kostiew
Registration No. 60,297

Date: January 16, 2008
CANTOR COLBURN LLP
20 Church Street
Floor 22
Hartford, CT 06103
Telephone (860) 286-2929
Facsimile (860) 286-0115
Customer No.: 23413